

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/536,853
Applicant : AZNAR, Pascal
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Art Unit : 4116
Examiner : MARTINEZ, Brittany M
Docket No. : 103.001
Customer No. : 41754

DECLARATION OF MR. PASCAL AZNAR UNDER 37 C.F.R.
SECTION 1.132

I, Pascal Aznar, declare and say:

That I am a citizen of France and I reside at 5 allée Gabriel Dupont
Le Vesinet France.

That I am the inventor of the above-identified patent application.

That I graduated in 1982 from the Conservatoire National d'Arts et
Metiers located in Paris, France with an engineer's degree in chemical
engineering which is roughly equivalent to a Master of Science (M.S.) in
Chemistry in the United States educational system.

That since 1980 I have been working in the field of chromatography.

I have been employed as a technical-commercial staff member by
Touzart & Matignon from 1980 to 1984 a French company that was active
in the field of chromatography. From 1984 to 1991, I was the founder and
president of Societe Francaise Chromoato Colonnes (S.F.C.C.), a company
that specialized in the manufacture of high performance liquid
chromatography (HPLC) columns. From 1992 to present I am the founder



and president of AIT, a company that specializes in the field of flash chromatography.

That I am familiar with the above-identified patent application Serial Number 10/536,853 and with the following references cited by the Examiner: Fuji (XP-002198180) and Schwartz (WO 92/04976).

That a common goal through out the existence of the art of flash chromatography a driving force behind the development of new techniques in the art of flash chromatography is the desire to improve the resolution by which the materials in a given sample may be separated. That resolution of different techniques may be compared by determining a theoretical plate number for a separation.

That Dr. Albin Maish, President of Dr. Albin Maisch High Performance LC, Ammerbuch, Germany, performed on my behalf as described in detail hereinafter to compare flash chromatography using silica particles in the manner employed in the cited references with flash chromatography employing silica particles as claimed in the above-identified patent application.

That I have extracted results performed in Fuji from the graph in the section thereof entitled "Loading amount and performance."

That to compare these results with the flash chromatography disclosed in the cited reference, the procedure described in the Fuji reference was repeated by substituting $25\mu\text{m}$ silica particles as claimed for the $60\mu\text{m}$ silica particles as set forth in Fuji.

That the results of this test are summarized in the following table:



Sample Load	ω	Plates number for Silica spheres of 25 μ m (As claimed in the present application for patent)	Plates number for Fuji* silica spheres of 60 μ m
3mg	6,5	6135	800
6mg	7	5290	750
12,5mg	11,5	2450	700
25mg	13	1534	550
50mg	14	1322	400
100mg	16,5	950	270

That the above test demonstrates clearly the superiority of the silica spheres used as a packing material as claimed in the above-identified patent application in that (1) for the same sample load the theoretical number of plates is much greater when using 25 μ m silica particles as claimed rather than the 60 μ m (e.g., for a 3mg sample, the invention achieves a theoretical plate number of 6135 whereas Fuji¹ achieves a theoretical plate number of 800), and (2) the loading capacity is superior with the 25 μ m spherical silica columns in the sense that these columns provide a higher sample load for a given desired number of plates (e.g., for a desired number of plates of 800 the sample load for the 60 μ m column is

¹ Fuji, Silica gel for flash chromatography, FL60D, XP-002198180, Pages 1-2, "Separation of Standard Sample"



only 3mg, whereas for the slightly higher number of plates, 950, the sample load for the 25 μ m column is 100mg). Having the higher sample load is desirable in that a given quantity of chemical mixture may be purified in fewer runs. The end result is that the 25 μ m column achieves considerable savings in terms of time and solvent used because purification may be performed to the desired level in significantly fewer runs as compared to the 60 μ m columns disclosed in Fuji.

That the above experimental results further illustrate that the resolution (R_s), which relates to the degree of purification, is directly proportional to the number of plates. Consequently, the degree of purification achieved using the 25 μ m spherical silica columns as claimed in the above-identified invention provides a higher degree of purification than the columns in accordance with the Fuji reference.

Given that these results are substantially better than those provided in Fuji and that Schwartz discloses silica spheres of similar characteristic as those used in accordance with the claimed invention, it must follow that it would not have been obvious to a person of ordinary skill in the art to modify Fuji with the particles of Schwartz because had it been obvious to do so, given the remarkable results achieved in using the 25 μ m spheres, that substitution would have already been attempted. However, to my knowledge, no such substitution has been reported.

That a desirable characteristic of a flash chromatography system is to reduce the pressure requirement on pumps used to pump the sample to be separated through the chromatography column. The back pressure produced by the packing material affects the necessary driving pressure. With irregular shaped silica less than 40 μ m, the backpressure becomes too high for desirable operating conditions, in particular, allowing for the use of inexpensive column materials such as glass and plastic. It is my belief that because the back pressure is undesirably high in liquid chromatography systems that use particles smaller than 40 μ m, at the



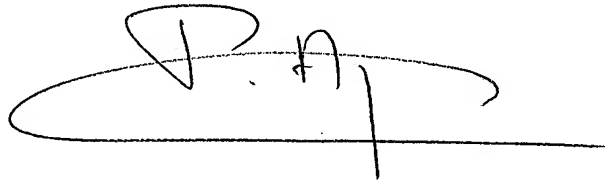
time of the invention it had become generally accepted that the use of packing material with such small particle size was detrimental to practical low-cost liquid chromatography systems.

That the undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issuing thereon;

Further declarant saith not.

Date: 08 December 2008

Pascal Aznar

A handwritten signature in black ink, appearing to read 'P. Aznar', is written over a horizontal line. The signature is stylized with a large loop at the beginning and a vertical stroke at the end.